

# Facts:

from the Colorado Department of Public Health and Environment



## Mosquito control insecticides: Naled

**Trade names:** Bromex, Dibrom® Concentrate, Dibrom®-8, Fly Killer-D, and Trumpet® EC

**Chemical name:** dimethyl phosphate (1,2-dibromo-2,2-dichloroethyl dimethyl phosphate)

**Mode of action:** Naled interferes with cholinesterase, a compound in the insect's body that directs nerve cell activity. This causes the insect's nervous system to be overstimulated, resulting in respiratory paralysis (inability to breathe) and death.

**Persistence/duration:** Naled degrades, or breaks down, fairly quickly. More than 90 percent of the chemical breaks down within 30 hours.

**Uses:** Naled is registered by the U.S. Environmental Protection Agency and the Colorado Department of Agriculture for use in controlling agricultural insect pests and for mosquito control.

**Rate of application:** For mosquito control, the pesticide application uses ultra-low volume technology, which requires very small amounts of pesticide to be used. The maximum rate for ground and aerial application is 1.6 oz. of active ingredient per acre.

### What is naled?

Naled is an insecticide (a chemical that kills insects) used for controlling adult mosquitoes. The chemical was first introduced in 1959 and is approved for use in the United States by the U.S. Environmental Protection Agency (EPA). Naled also is used to control insects on food and feed crops, and in greenhouses.

### Is naled dangerous?

Pesticides and insecticides are designed to kill the target pest or insect. If mis-handled or used incorrectly, these products could cause human health problems. That is why pesticide applicators are licensed and regulated by the state and EPA, and the products must be applied exactly as instructed on the label, using the recommended safety precautions.

When applied properly at very small concentrations, EPA found that naled kills mosquitoes without creating health risks to adults, children, wildlife, or the environment.

### Does this mean that naled is safe?

It is difficult to answer this question because, technically, no pesticide can be

considered completely "safe." Federal law prohibits claims that pesticides are "safe."

Any pesticide's safety depends on how it is used. Pesticides that are approved by EPA are considered to present an "acceptable level of risk" when applied as directed.

### What is an "acceptable level of risk?"

EPA scientists conduct studies to estimate a pesticide's risk to humans. These studies look at the risk of illness when used as directed, and the potential for illness if a person is exposed to much higher levels. From these studies, the amount of chemical that can be applied is determined. These approved application levels are well below the amount needed to cause immediate human illness, but will still kill mosquitoes. Naled should be used only when needed, applied at the lowest rate to do the job, while following all safety recommendations.

### What are the health risks of naled?

Naled is sprayed in a diluted solution, with a maximum of 1.6 ounces of the active ingredients applied per acre. The general public is exposed to very little of the chemical.

At lower concentrations, naled can be irritating to the skin and eyes. It may cause problems for people with asthma and a small number of people who are very sensitive to chemicals in general.

High-dose exposure usually results from accidental or intentional ingestion of the chemical or from accidents when working with the undiluted chemical. In a high-dose exposure, naled can cause numbness, headaches, dizziness, tremors, nausea, abdominal cramps, sweating, blurred vision, difficulty breathing, and a slowed heartbeat. Severe poisoning with naled can cause convulsions (seizures), respiratory paralysis (inability to breathe), and death. High-dose exposure to the general public would not occur in the community during mosquito spraying.

EPA studies have determined that there is no evidence that naled causes cancer. When naled degrades, or breaks down, it produces a chemical by-product, dichlorvos, which has been classified by EPA as a possible carcinogen (cancer-causing agent).

Naled has been used widely for 40 years in agriculture and mosquito control without any known connection to cancer in people.

## Are some people at greater risk for problems from naled ?

Most people will not experience any symptoms, because exposure to the chemical during spraying is so low.

- Some people are highly sensitive to chemicals in general. They could experience short-term effects, such as skin, eye, and nose irritation, or respiratory problems.
- Naled may worsen conditions such as asthma.
- As with any chemical, pregnant women should minimize exposure.

## How is naled used to kill mosquitoes?

Naled is sprayed using ultra-low volume sprayers mounted on trucks or small aircraft. The ultra-low volume sprayers produce very small droplets (5 to 20 microns; so small that several droplets would fit on the tip of a pin) that drift in the air and kill adult mosquitoes on contact.

## Will naled harm pets or other animals?

Just as with humans, when pesticides are evaluated, the risk to pets, fish, birds, wildlife, and livestock is considered. No specific risks to animals are expected when used as directed. If you are concerned, you can reduce your pets' exposure by keeping them indoors and covering fishponds during spraying.

## Is naled harmful to bees?

Naled is an insecticide and it will kill bees. Mosquito spraying operations are scheduled after dusk when mosquitoes

are most active and when bees would be back in their hives. More information is available at [www.fightthebitecolorado.com](http://www.fightthebitecolorado.com).

## What happens to naled when it enters air, soil, and groundwater?

- Naled breaks down in the open air, water, and sunlight.
- Soil bacteria break down naled quickly. The potential to contaminate groundwater is very low.
- When naled degrades, or breaks down, it produces the chemical dichlorvos. Like naled, dichlorvos is short-lived in the environment.

## Is it safe to swim in the swimming pool after spraying with naled?

- Naled breaks down quickly in water and in sunlight, so no special precautions or waiting period are necessary.
- If you are concerned, you can reduce exposure by covering your pool during spraying.

## What can I do to reduce exposure to pesticides like naled during mosquito control spraying?

No special actions are recommended and there is no need to relocate during mosquito control spraying. Naled, when used in mosquito control, poses minimal risks to human health.

If you are concerned, there are a number of common-sense steps to help reduce exposure to pesticides during spraying:

- Contact your mosquito control district office or local health agency to find out about mosquito control programs in your area. A well run

mosquito control program will post spray times and locations several days prior to spraying.

- Persons with chemical sensitivities, asthma, or other respiratory conditions should stay indoors during spraying since there is a possibility that spraying could worsen those conditions.
- Pregnant woman may choose to stay indoors during spraying to limit exposure.
- If you are outdoors during spraying operations, avoid eye contact with the spray. If you get pesticide spray in your eyes or on your skin, rinse with water.
- Shut windows and turn off air conditioners during spraying.
- Bring children's toys, pets' dishes, outdoor furniture and equipment, and clothing indoors. Cover outdoor furniture, barbecue grills, and play equipment. If items are left outside, rinse with water.
- Wash fruits and vegetables from the garden with water before storing, cooking, or eating them.
- If you think you may have a bad reaction to insecticides used for mosquito control, call your doctor or the Rocky Mountain Poison and Drug Center at 1-800-222-1222.

## Why are public health agencies using naled for mosquito control?

The risk of West Nile virus is considered to be a public health threat. Officials identified naled as a means to control mosquitoes that is effective, with minimal risk to human health.

## Reliable sources of information

### Colorado HELP hotline

[www.cohelp.us](http://www.cohelp.us)  
1-877-462-2911 (toll-free)  
M-F 7 a.m. – 11 p.m.; S-S 9:30 a.m. – 8 p.m.

### Colorado Agriculture Pesticide Program

[www.ag.state.co.us/dpi/pesticides/](http://www.ag.state.co.us/dpi/pesticides/)  
303-239-4146

### National Pesticide Information Center

[npic.orst.edu](http://npic.orst.edu)  
1-800-858-7378  
7:30 a.m. – 5:30 p.m. MST

### U.S. Environmental Protection Agency

[www.epa.gov/pesticides/factsheets/naled4mosquitos.htm](http://www.epa.gov/pesticides/factsheets/naled4mosquitos.htm)  
Region VIII: 1-800-227-8917



Colorado Department  
of Public Health  
and Environment

July 2004